

1 CLAIMS

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3 1. A strategy for suppressing or partially
4 suppressing an endogenous gene and replacing the
5 suppressed gene sequence with a nucleic acid
6 sequence which differs from the endogenous gene
7 and wherein the suppressing agent(s) comprises at
8 least one suppressor from the group comprising
9 antisense nucleic acid, peptide nucleic acids, DNA
10 capable of forming triple helix or ribozymes
11 targeted to the endogenous gene or gene
12 transcripts and wherein the replacement nucleic
13 acid sequence encodes at least part of a gene
14 product and is not suppressed by suppression
15 agent(s) or is suppressed less efficiently by
16 suppression agent(s) and wherein the replacement
17 nucleic acid sequence comprises amino acid codons
18 which encode at least part of the gene product,
19 and have modifications at wobble site(s) such that
20 replacement nucleic acids still code for the wild
21 type or equivalent amino acids.

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23 2. A medicament comprising either one or both of a
24 gene suppressing agent and a nucleic acid encoding
25 at least part of a replacement gene product for
26 use in a strategy as claimed in Claim 1.

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28 3. A medicament comprising a nucleic acid sequence
29 encoding at least part of a gene product wherein
30 the sequence differs from the endogenous gene in
31 wobble sites.

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- 1 4. A strategy for suppressing or partially
2 suppressing an endogenous gene and introducing a
3 replacement gene said strategy comprising the
4 steps of:
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6 a. providing suppression nucleic acids or other
7 suppression effector(s) able to recognise,
8 bind or cleave an endogenous gene, gene
9 transcript(s) or gene product to be
10 suppressed and
11 b. providing genomic DNA or cDNA (complete or
12 partial) encoding a replacement gene wherein
13 the suppression nucleic acids are unable to
14 recognise, bind or cleave or able to
15 recognise, bind or cleave less efficiently
16 equivalent regions in the genomic DNA or cDNA
17 to prevent suppression of the replacement
18 gene wherein the coding sequence of
19 replacement nucleic acids has been altered to
20 prevent or reduce efficiency of suppression
21 and wherein replacement nucleic acids have
22 modifications in one or more wobble sites
23 such that replacement nucleic acids still
24 code for the wild type or equivalent amino
25 acids.
26
27 5. The use of a strategy as claimed in any of the
28 preceding Claims in the preparation of a
29 medicament for the treatment of an autosomal
30 dominant disease caused by an endogenous target
31 gene wherein the disease is caused by different
32 mutations in the same gene in different patients.

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2 6. The use of:

3 a. a vector or vectors containing suppression
4 effector(s), said suppression effector(s)
5 being able to recognise, bind or cleave
6 coding sequences of a target endogenous gene
7 and

8 b. vector(s) containing replacement nucleic
9 acids in the form of genomic DNA, cDNA or
10 RNA, which contain altered wobble sites such
11 that replacement nucleic acids cannot be
12 recognised, bound or cleaved by suppressor(s)
13 or are recognised, bound or cleaved less
14 efficiently by suppressor(s) which are
15 targeted towards coding sequence of the
16 endogenous gene and which provide the wild
17 type gene product and wherein the difference
18 between said endogenous gene and the
19 replacement gene still enables the expression
20 of the replacement gene,

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22 in the preparation of a medicament for the
23 treatment of an autosomal dominant disease caused
24 by the endogenous gene wherein the disease is
25 caused by different mutations in the same gene in
26 different patients.

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28 7. A use as claimed in Claims 5 or 6 wherein the
29 disease is a polygenic disorder.

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31 8. A use as claimed in Claim 6 or 7 wherein
32 suppressor(s) or replacement gene(s) are

1 administered alone or in vector(s) chosen from DNA
2 plasmid vectors, RNA or DNA viral vectors.

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4 9. A use as claimed in Claim 8 wherein the
5 suppressor(s) or replacement gene(s) are combined
6 with lipids, polymers or other derivatives.

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8 10. A kit for use in the treatment of an autosomal
9 dominant or polygenic disease caused by
10 mutation(s) in a target endogenous gene, the kit
11 comprising at least one suppression effector able
12 to recognise, bind or cleave coding sequence(s) of
13 the endogenous gene to be suppressed and at least
14 one replacement gene to replace the endogenous
15 gene having modifications to wobble sites such
16 that the replacement gene cannot be recognised,
17 bound or cleaved or can be recognised, bound or
18 cleaved less efficiently by suppressor(s) targeted
19 to coding sequence(s) of the endogenous gene, said
20 replacement nucleic acid sequence providing the
21 wild type gene product, and wherein the difference
22 between said wild type target gene and the
23 replacement gene still enables expression of the
24 replacement gene.

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26 11. A use as claimed as in Claims 1 to 10 wherein the
27 replacement gene is altered from the wild type
28 gene and provides a beneficial effect when
29 compared to the wild type gene.

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